



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/751,731	01/06/2004	Kyung-geun Lee	1793.1119	1493

49455 7590 12/07/2006

STEIN, MCEWEN & BUI, LLP  
1400 EYE STREET, NW  
SUITE 300  
WASHINGTON, DC 20005

EXAMINER

ALUNKAL, THOMAS D

ART UNIT PAPER NUMBER

2627

DATE MAILED: 12/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/751,731	<b>Applicant(s)</b> LEE ET AL.	
	<b>Examiner</b> Thomas D. Alunkal	<b>Art Unit</b> 2627	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 06 January 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-42 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-42 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Priority***

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Claim Objections***

Claims 2,7, and 40 are objected to because of the following informalities:

Claim 2 cites "claim 1wherein". Replace with "claim 1, wherein".

Claim 7 cites "wherein s minimum". Replace with "wherein a minimum".

Claim 40 cites "a quality marked". Replace with "a quality mark".

Appropriate correction is required.

### ***Double Patenting***

Claims 8 is objected to under 37 CFR 1.75 as being a substantial duplicate of claim 14. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 3,5,6,11, and 12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Art Unit: 2627

Regarding claims 3, the claim states that "the erase multi-pulse train has high and low erase power levels and the low erase power level is set to be equal to a predetermined DC level of a general erase power, and the high erase power level is equal to the predetermined DC level". From this limitation, it is unclear how there are two distinct erase power levels since both are set to the same predetermined DC level. In this office action, the examiner is treating erase multi-pulse train in claim 3 as having one distinct predetermined DC level.

Regarding claims 5,6,11, and 12, it is unclear exactly what the ranges (0.9-1.3) and (0.7-1.4) are meant to encompass. With these ratios, the time duration of the last pulse to the time duration of the multi-pulse is approximately 1. From applicant's disclosure, it appears that the multi-pulse train has a time duration that is much higher than that of the last pulse, which would not result in such a ratio.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-25,27-32, and 37-40 are rejected under 35 U.S.C. 102(b) as being anticipated by Yokoi et al (hereafter Yokoi) (US 5,732,062).

Art Unit: 2627

Regarding claim 1, Yokoi discloses an optical recording medium (Column 11, lines 58-62) recording, erasing, and reproducing data (Column 8, lines 38-40), comprising a recording layer having a specific zone in which additional recording information, including power information for high-speed recording of a recording pattern for data recording (Figure 30A, Element 107a and Figure 7, specifically, the power of the various waveforms).

Regarding claim 2, Yokoi discloses wherein the power information indicates that a recording pattern is formed of a recording multi-pulse train including a first pulse, a multi-pulse train and/or last pulse (Figure 7, specifically, the multi-pulse light-emission waveform), wherein the recording multi-pulse train has high (Figure 7, Pulse level Ar) and low (Figure 7, Pulse level Af) write power levels, and the low write power level is set to be higher than a bias power level (Figure 7, Pulse level C).

Regarding claim 3, Yokoi discloses wherein an erasure pattern formed of an erase multi-pulse train for data erasure is recorded (Column 12, lines 48-51), and the power information indicates that the erase multi-pulse train has high and low erase power levels and the low power level is set to be equal to a predetermined DC level of a general erase power, and the high erase power level is equal to the predetermined DC level (Figure 7, Pulse level D).

Regarding claim 4, Yokoi discloses wherein a ratio of a time duration of the last pulse to a time duration of the multi-pulse train has a predetermined range with respect to a range of jitter allowable by a system (Column 8, lines 41-

Art Unit: 2627

52, wherein the heating pulse corresponds the multi-pulse heating pulse of Figure 7).

Regarding claim 5, Yokoi discloses wherein the ratio of the time duration of the last pulse to the time duration of the multi-pulse train ranges from 0.9-1.3 (Column 8, lines 53-56. Specifically, the ratio of the cooling pulse to the heating pulse is 1.2). Yokoi also discloses wherein the range of jitter allowable by the system is 7% (This being an inherent property of the ratio of the time duration of the last pulse to the time duration of the multi-pulse).

Regarding claim 6, 11, and 12, these claims contain limitation similar to those in claim 5 and are rejected over the same grounds.

Regarding claim 7, Yokoi discloses wherein a minimum cooling time duration of the last pulse depends on the range of jitter allowable by a system, and a maximum cooling time duration of the last pulse depends on a length of a minimum recorded mark (Column 7, lines 23-35. Specifically, the jitter is reduced with shorter cooling times, which is set to the shortest-length record mark size, to do so).

Regarding claim 8, Yokoi discloses wherein the cooling time duration of the last pulse of the recording pattern is set to the length of the minimum recorded mark (Column 8, lines 17-22).

Regarding claim 9, 10, 13, 14, and 15, these claims contain limitations similar to those in claims 1, 3, 4, 7, and 8 and are rejected over the same grounds.

Regarding claim 16, Yokoi discloses wherein power levels of a first pulse and a last pulse forming the erasure pattern are recorded as one of 4 types,

Art Unit: 2627

including a first type where power levels of the first pulse and last pulse are equal to a high erase power level, a second type where the power level of the first pulse is equal to a low erase power level and the power level of the last pulse is equal to the high erase power level, a third type where the power level of the first pulse is equal to the high erase power level and the power level of the last pulse is equal to the low erase power level, and a fourth type where the power levels of the first pulse and last pulse are equal to the low erase power level (Figure 7, light-emission power level D where first and last pulse are at the same erasure power).

Regarding claim 17, Yokoi discloses a method of recording data onto an optical recording medium (Column 11, lines 58-62 and Column 8, lines 38-40), the method comprising: generating a recording waveform having a recording pattern for high-speed recording (Column 4, lines 53-58 and Figure 7) and forming a first level of the data as a mark and a second level of the data as a space, using the generated recording waveform (Column 11, lines 65-67 and Figure 17, which displays the mark and subsequent unmarked space).

Regarding claims 18, 19, and 20, these claims contain limitations similar to those in claims 2, 3, and 4 and are rejected over the same grounds.

Regarding claim 21, Yokoi discloses a method of recording data onto an optical recording medium (Column 11, lines 58-62 and Column 8, lines 38-40), the method comprising: generating a recording waveform having a recording and an erasure pattern with a multi-pulse train for high-speed recording (Column 4, lines 53-58 and Figure 7. Specifically, level D which corresponds to erasure) and

Art Unit: 2627

forming a first level of the data as a mark and a second level of the data as a space, using the generated recording waveform (Column 11, lines 65-67 and Figure 17, which displays the mark and subsequent unmarked space).

Regarding claim 22, this claim contains limitations similar to those in claim 18 and is rejected over the same grounds.

Regarding claim 23, Yokoi discloses wherein time periods of the recording multi-pulse train are controlled with respect to a timing window  $T_w$  within a range of  $.25-2.0T_w$  (Column 8, lines 41-52, which shows that time periods fall within the range).

Regarding claim 24, Yokoi discloses wherein time periods of the recording multi-pulse train are equal to  $1.0T_w$  (Column 8, lines 17-22. Specifically, each heating and cooling pulse is equal to the period  $T$ ).

Regarding claim 25, Yokoi discloses wherein time periods of the recording multi-pulse train are equal to  $2.0T_w$  (Column 5, lines 56-61. Specifically, mark lengths can range from 1,2,3,4,ect...).

Regarding claims 27,28,29, and 30, these claims contain limitations similar to those in claims 1,4,7, and 8.

Regarding claim 31, Yokoi discloses an apparatus for recording data onto an optical recording medium (Column 11, line 49), the apparatus comprising: a recording waveform generating circuit, which generates a recording waveform having a recording pattern for high-speed recording of the data (Column 11, lines 49-52 and Column 4, lines 53-58), and a pickup unit, which forms a mark or



Art Unit: 2627

space by irradiating light onto the optical recording medium according to the generated recording waveform to record the data (Column 11, lines 60-63).

Regarding claim 32, this claim contains limitations similar to those of claim 2 and is rejected over the same grounds.

Regarding claims 37 and 38, these claims contain limitations similar to those in claims 3 and 4 and are rejected over the same grounds.

Regarding claim 39, this claim contains limitations similar to those of claim 1 and is rejected over the same grounds.

Regarding claim 40, Yokoi discloses an optical recording medium comprising a recording layer (Column 11, line 58) wherein shapes of leading and trailing parts of a mark are prevented from being distorted by applying an erase power level to the optical recording medium in the shape of a pulse (Column 18, lines 16-54).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 26,33,34,35,36,41, and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yokoi et al (hereafter Yokoi) (US 5,732,062) as applied

Art Unit: 2627

to claim 1-25,27-32, and 37-40 above, and further in view of Minemura et al (hereafter Minemura) (US 5,608,710).

Regarding claim 26, Yokoi does not disclose wherein power levels of the multi-pulse train constituting the erasure pattern periodically change between at least two levels, a high erasure power level  $P_{pe}$  and a low erase power level  $P_{be}$ . In the same field of endeavor, Minemura discloses a multi-pulse train which includes to erasure power levels, EH and EL.

One of ordinary skill in the art at the time of the applicant's invention would found it obvious to provide the modulation apparatus of Yokoi with the dual power levels of Minemura, motivation being to effectively reduce jitter in the system (Column 3, lines 35-50 of Minemura). In addition, providing two erasure power levels account for the erasure differences between the marks and spaces, which could lead to degradation in the amount of rewrites on the optical disc.

Regarding claim 33, Minemura discloses wherein the recording waveform further comprises an erasure pattern formed of an erase multi-pulse train for data erasure (Figure 3), and the erasure multi-pulse train has a high erase power level (Figure 7, element EH) and a low erase power level (Figure 7, element EL) and a low erase power level is set equal to a predetermined DC level of a general erase power (Figure 4, level EH=EL and Column 4, line 12), a high erase power level is set to be equal to the predetermined DC level (Figure 4, level EH=EL and Column 4, line 12) or the predetermined DC level is set between the high erase power level and the low erase power level (Figure 3. Specifically an power level between EH and EL).

Art Unit: 2627

Regarding claims 34,35, and 36, these claims contain limitations similar to those in claims 4,7, and 8 and are rejected over the same grounds.

Regarding claims 41 and 42, these claims contain limitations similar to those of claims 23,25, and 26 and is rejected over same grounds.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas D. Alunkal whose telephone number is (571)270-1127. The examiner can normally be reached on M-F 7:30-5:00.

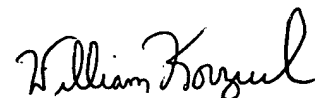
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Korzuch can be reached on (571)272-7589. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2627

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Thomas Alunkal



WILLIAM KORZUCH  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600